Source: Texas A&M Transportation Institute

North American Free Trade Agreement: Is it Important for Texas?

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What is the North American Free Trade Agreement (NAFTA)?

On January 1, 1994, the North American Free Trade Agreement (NAFTA) between the United States, Canada, and Mexico took effect. NAFTA eliminated duties and quantitative restrictions to foster trade among the three member countries. Many of these tariffs and restrictions were eliminated immediately, but some were phased out over a period of five to 15 years. This allowed for an orderly adjustment to free trade with Mexico.

NAFTA created the world's largest free trade area, resulting in a total trade value of $705.6 billion by the end of August 2012 (Secretaría de Economía, 2012). The implementation of NAFTA has resulted in a system of transfer stations, distribution centers, and warehouses on the U.S. side of the border and maquiladora plants in Mexico (Vadali, Kang, and Fierro, 2011).

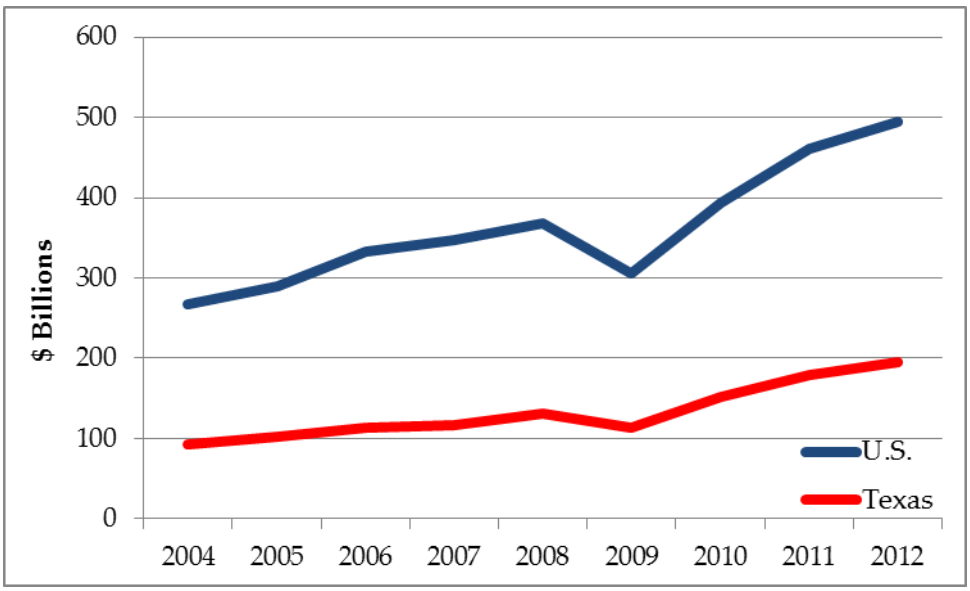
A maquiladora plant is a manufacturing facility located in Mexico that temporarily imports materials for assembly on a duty-free basis, provided the product is re-exported.

Did NAFTA Impact Traffic/Trade?

The Value of Trade with Mexico has Increased

One of the objectives of NAFTA was to eliminate barriers to trade and thereby increase trade between the U.S., Canada, and Mexico. The data published by the Bureau of Transportation Statistics (TransBorder Freight Data) show that the value of U.S.-Mexico trade and Texas-Mexico trade increased by 85.3% and 108.9%, respectively between 2004* and 2012. In 2012, U.S.-Mexico trade amounted to almost $494 billion while Texas-Mexico trade amounted to approximately $195 billion (or approximately 39.4% of total U.S.-Mexico trade). Figure 1 also shows that the economic recession only resulted in a brief decrease in trade with Mexico by both the U.S. and Texas.

* The earliest year for which data are available.



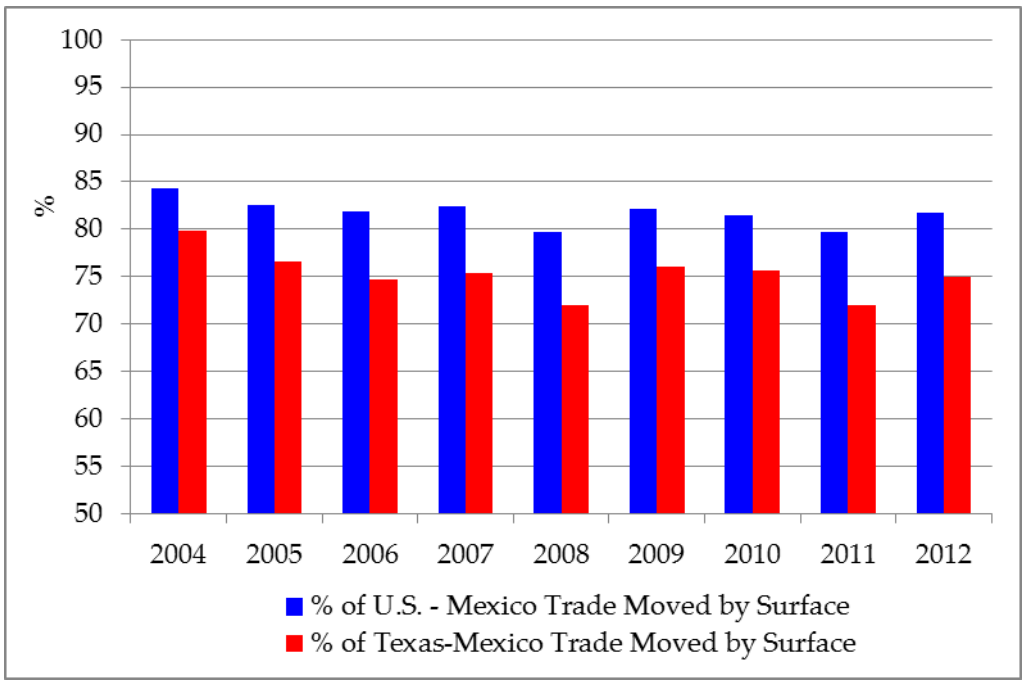
Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data

Figure 1: Value (in Actual U.S. Dollars) of Trade with Mexico

Weight/tonnage information is only available for U.S. imports from Mexico. An analysis of the data revealed that the value of U.S. imports from Mexico per imported U.S. short ton increased by 119.5% between 2004 and 2012 – or at an annual rate of 10.3%. Similarly, the value of Texas imports from Mexico per imported U.S. short ton increased 165.5% between 2004 and 2012 – or at an annual rate of 13%. These statistics seem to indicate that over the past eight years increasingly higher valued commodities have been imported by the U.S. and Texas from Mexico.

Most of the U.S.-Mexico Trade Moves by Surface Modes

On average more than 80% of the U.S.-Mexico trade and 75% of the Texas-Mexico trade are transported by surface modes (e.g., truck, rail, pipeline, mail, foreign trade zones, other, and unknown modes of transportation) – see Figure 2.

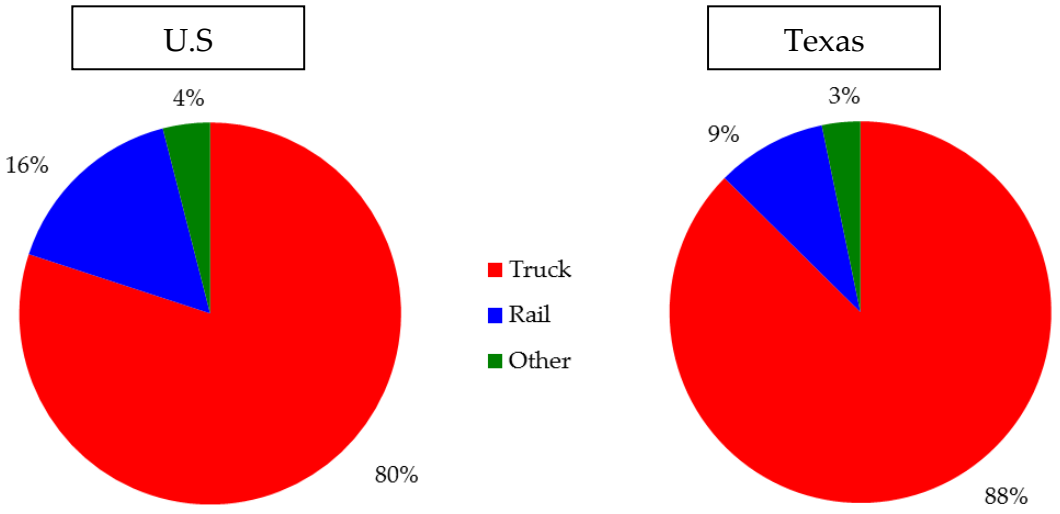


Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data

Figure 2: Value (in Actual U.S. Dollars) of Trade with Mexico

But Trucks Move the Lion's Share

Figure 3 shows that trucks transport 80% of the value of U.S.-Mexico surface trade and rail transports 16%. On the other hand, trucks transport 88% of the value of Texas-Mexico surface trade and rail transports 9% (see Figure 3).

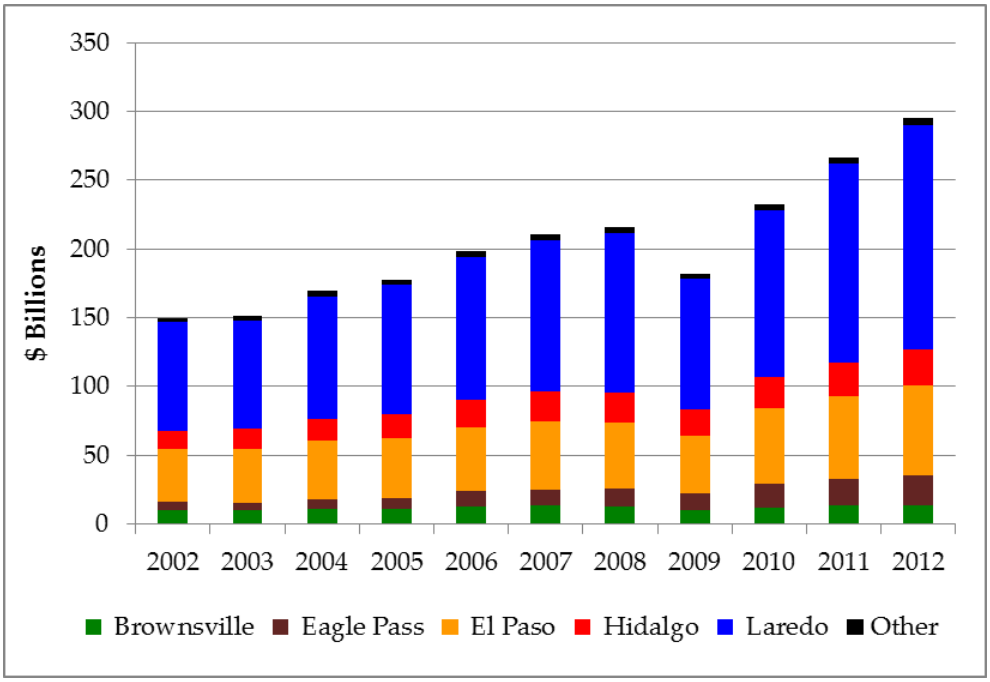


Other includes shipments made by pipeline, mail, foreign trade zones , other and unknown mode of transportation.
Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data

Figure 3: 2012 U.S.-Mexico (left) and Texas-Mexico (Right) Surface Trade by Mode of Transportation (in Actual U.S. Dollars)

A Substantial Share of U.S.-Mexico Trade Crosses Texas's Land Border

On average, approximately 60% of U.S. – Mexico trade (in terms of value) crossed at a Texas land port between 2004 and 2012, which points to the importance of Texas's transportation infrastructure – both its highways and rail systems - in serving the nation's trade with Mexico. Figure 4 illustrates where U.S.-Mexico surface trade crosses in Texas. Figure 4 shows that El Paso is second to Laredo in terms of the value of U.S. – Mexico trade that crosses the border.

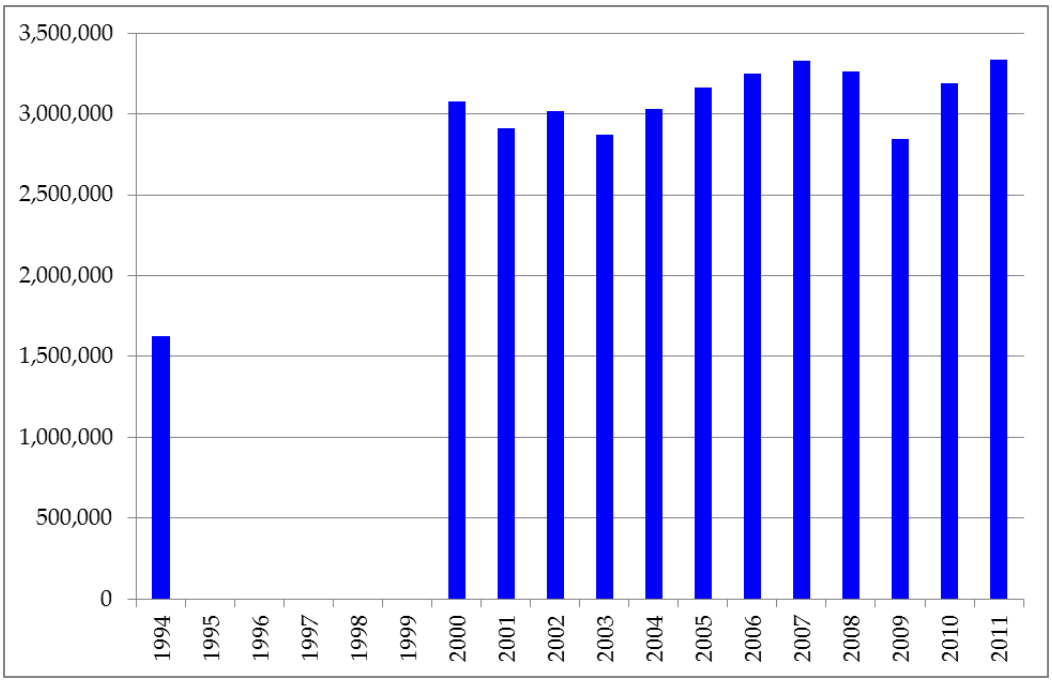


Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data

Figure 4: Value (in Actual U.S. Dollars) of Trade with Mexico

…… Translating into Increasing Truck Crossings

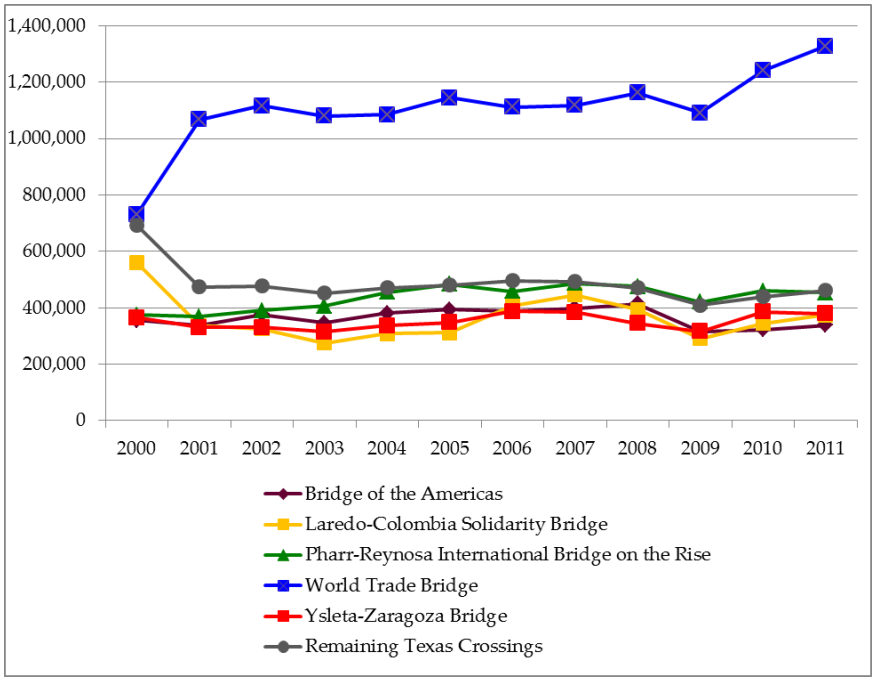
Figure 5 illustrates the increase in the number of northbound truck crossings at Texas's land ports since the implementation of NAFTA in 1994. Figure 5 shows that the number of northbound truck crossings at Texas's land ports more than doubled between 1994 and 2011 – i.e., from 1,623,816 in 1994 to 3,332,899 in 2011.



Source: Customs and Border Protection

Figure 5: Annual Number of Northbound Truck Crossings at Texas-Mexico Border (1994, 2000 to 2011)

In 2011, trucks crossed at 12 crossings in Texas. The top five crossings accounted for approximately 86% of all northbound truck crossings at the Texas-Mexico border. As depicted in Figure 6, the World Trade Bridge in Laredo had the highest number of northbound truck crossings at 1.3 million in 2011 followed by 452,821 northbound truck crossings at the Pharr-Reynosa International Bridge on the Rise, and 379,508 northbound truck crossings at the Ysleta-Zaragoza Bridge in El Paso.

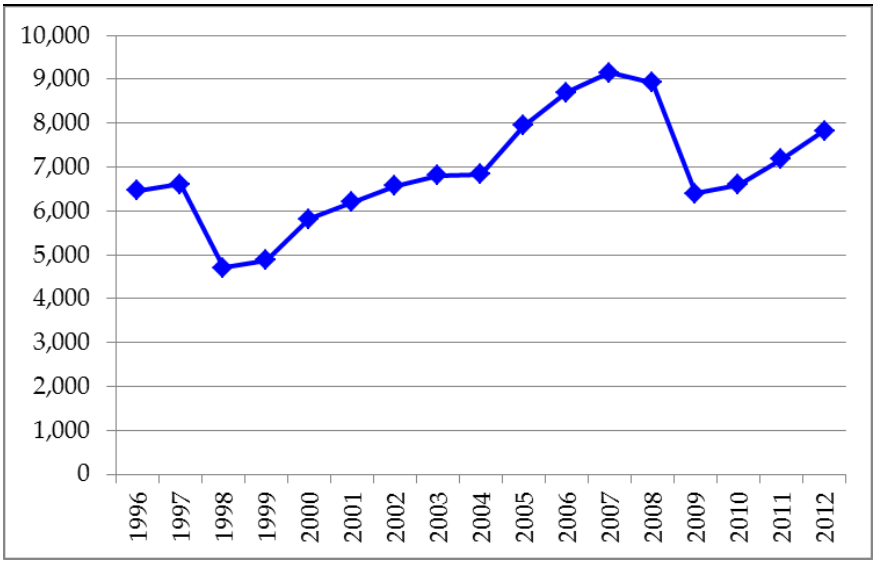


Source: Customs and Border Protection

Figure 6: Annual Number of Northbound Truck Crossings at Major Texas Truck Crossings (2000 to 2011)

…… Translating into Increasing Train Crossings

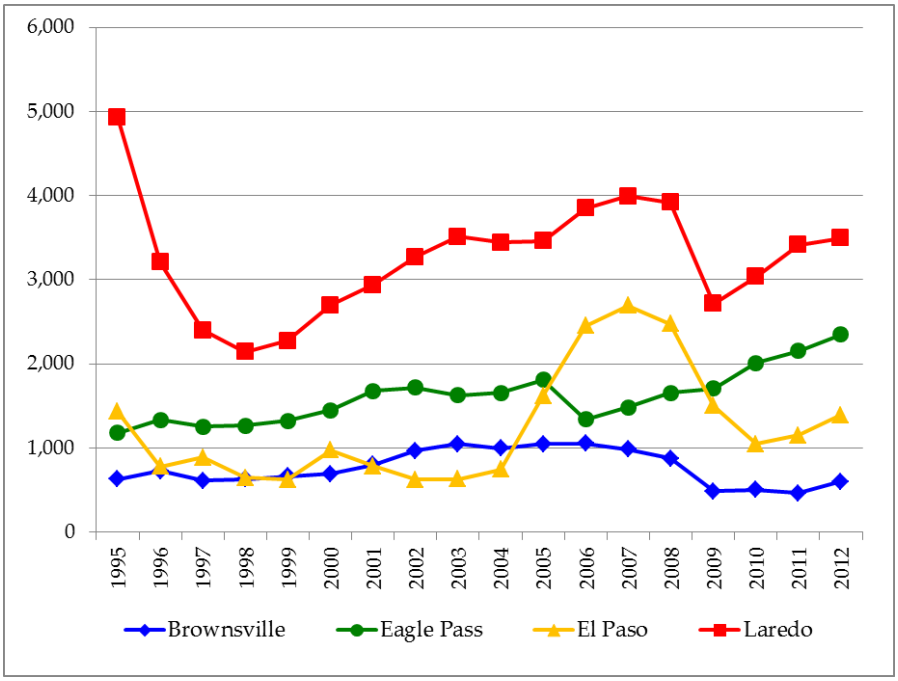
Five of the seven rail crossings on the U.S.-Mexico border are in Texas: Brownsville-Matamoros, Laredo-Nuevo Laredo, Eagle Pass-Piedras Negras, Presidio-Ojinaga, and El Paso-Ciudad Juarez. Figure 7 shows the number of trains that crossed at the Texas-Mexico border between 1996 and 2012. As shown in Figure 7, the number of trains crossing at the Texas-Mexico border increased by 94.7% between 1998 and 2007 – i.e., from 4,701 in 1998 to 9,155 in 2007. The economic recession was reflected in a 30% reduction in the number of train crossings at the Texas-Mexico border between 2007 and 2009. Since 2009, the number of train crossings has; however, increased 22.3% to reach 7,833 in 2012.



Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data

Figure 7: Number of Train Crossings at Texas-Mexico Border (1996 to 2012)

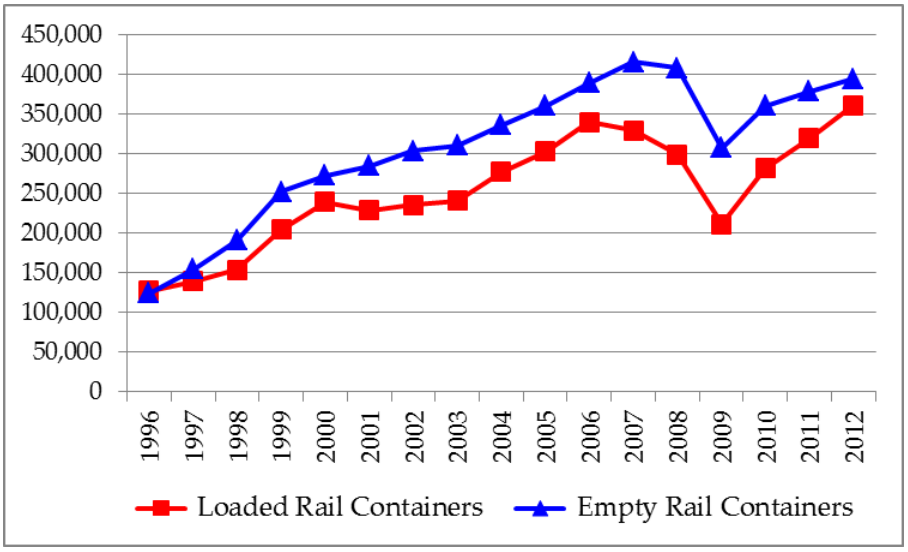
Laredo is the largest freight rail crossing on the Texas-Mexico border followed by Eagle Pass, El Paso, and Brownsville. Figure 8 shows the number of train crossings at the major Texas rail crossings. In general, the number of train crossings shows a similar trend: an increase in the number of train crossings between 1998 and 2007 followed by a decline in the recession years (i.e., 2007 to 2009) followed by a recovery between 2009 and 2012. The exception is Eagle Pass where the number of train crossings has increased at an average annual rate of 9.8% between 2006 and 2012



Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data

Figure 8: Number of Train Crossings at Major Texas Rail Crossings (1995 to 2012)

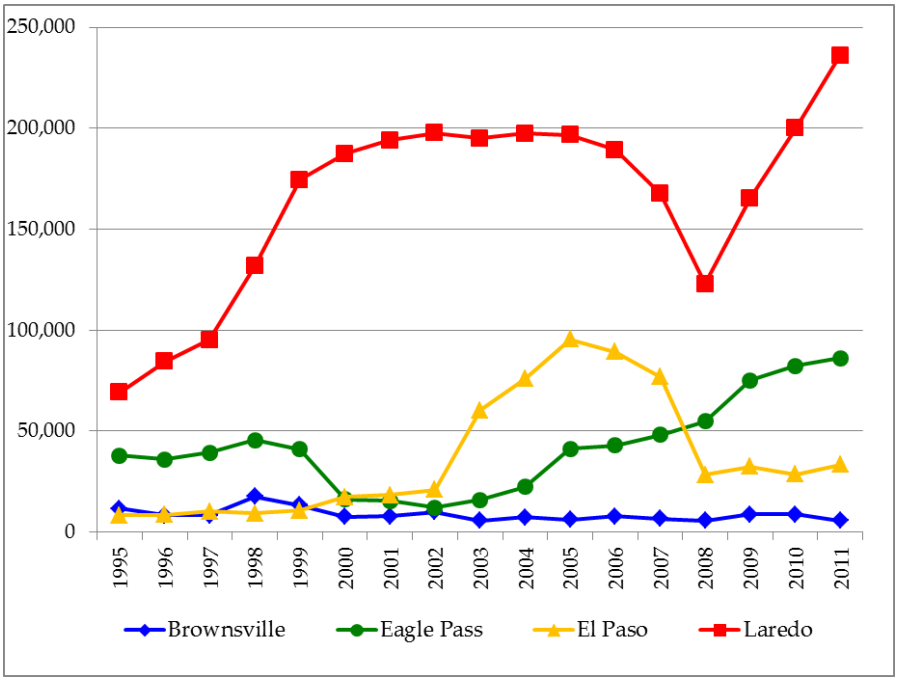
NAFTA railroads have been focusing on the movement of containers – specifically double stacked container unit trains – as a means to increase revenue without substantial capital investments in new capacity (Cambridge Systematics, 2007). Figure 9 illustrates the growth in intermodal container movements by rail between 1996 and 2012. Figure 9shows that the number of loaded rail containers crossing at the Texas-Mexico border have recovered and have exceeded pre-recession levels in 2012. The number of empty rail containers crossing at the Texas-Mexico border has; however, not returned to pre-recession levels.



Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data

Figure 9: Number of Rail Containers (Loaded and Empty) Crossing at Texas-Mexico Border (1996 to 2012)

Figure 10 shows the number of loaded rail containers crossings at the major Texas rail crossings. Figure 10 shows that the number of loaded rail containers that crossed at Laredo decreased by 15.1% between 2005 and 2008, but recovered to pre-recession levels in 2010. In 2011, the number of loaded rail containers continued to increase to reach 236,049, representing an increase of 18% in 2011 relative to 2010. Figure 10 also shows that the number of loaded rail containers that crossed at Eagle Pass was not affected by the recession and continued to increase at an average annual rate of 18.8% during the ten year period between 2002 and 2012. Finally, Figure 10 shows that the number of loaded rail containers crossing at El Paso and Brownsville have not recovered to pre-recession levels.

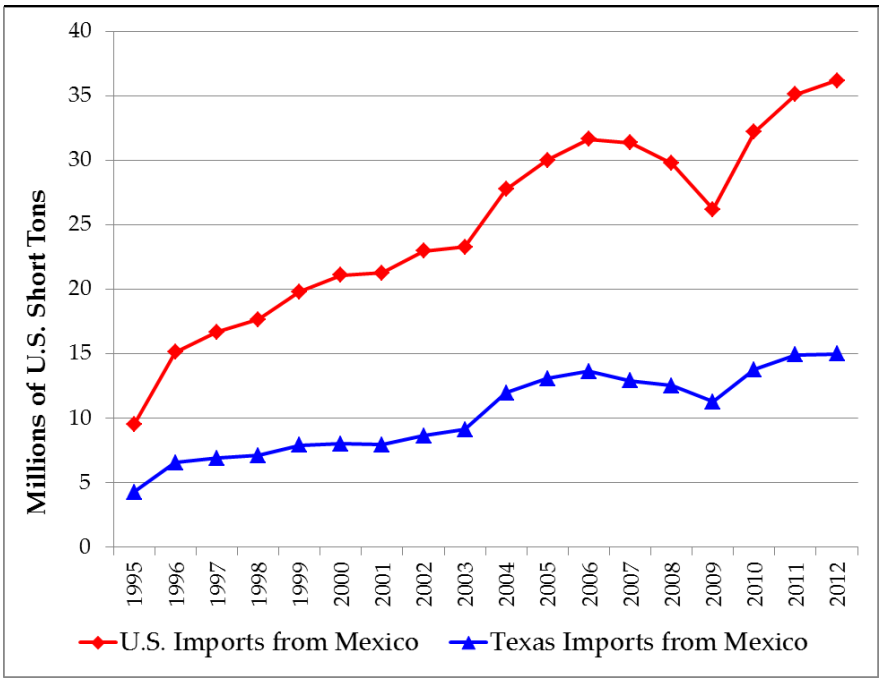


Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Border Crossing/Entry Data

Figure 10: Number of Loaded Rail Containers Crossing at Major Texas Rail Crossings (1995 to 2011)

What about the Weight?

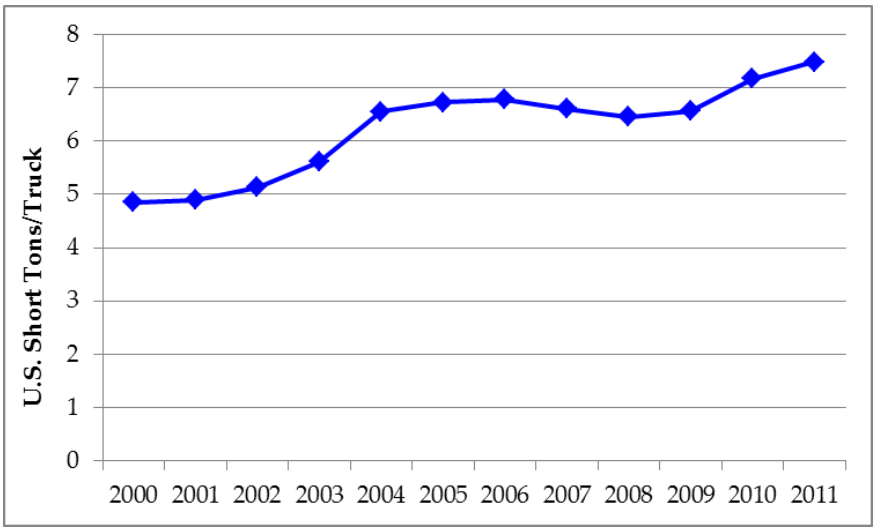
Weight information is only available for imports. Figure 11 shows the weight of U.S. and Texas imports from Mexico that crossed at Texas's land ports between 1995 and 2012. Figure 11 shows that besides the decline in imported weight in 2007, 2008, and 2009, the weight of U.S. and Texas imports (by surface modes) that crossed at a Texas land port have recovered and is exceeding pre-recession levels. Specifically, the weight of U.S. and Texas imports (by surface modes) that crossed at a Texas land port have increased 280.5% and 251.7%, respectively between 1995 and 2012.



Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data

Figure 11: U.S. and Texas Imports (Surface Modes) Crossing at Texas-Mexico Border (1995 to 2012)

In 2011 the total weight of U.S. imports that crossed by truck at a Texas land port amounted to 24.9 million tons (U.S. short tons). This translates into an average weight of 7.48 tons per truck crossing in 2011. Figure 12 shows that the average imported weight per truck crossing increased 54.2% between 2000 and 2011. These statistics point to a reduction in the number of empty trips and or the better utilization of trucks.

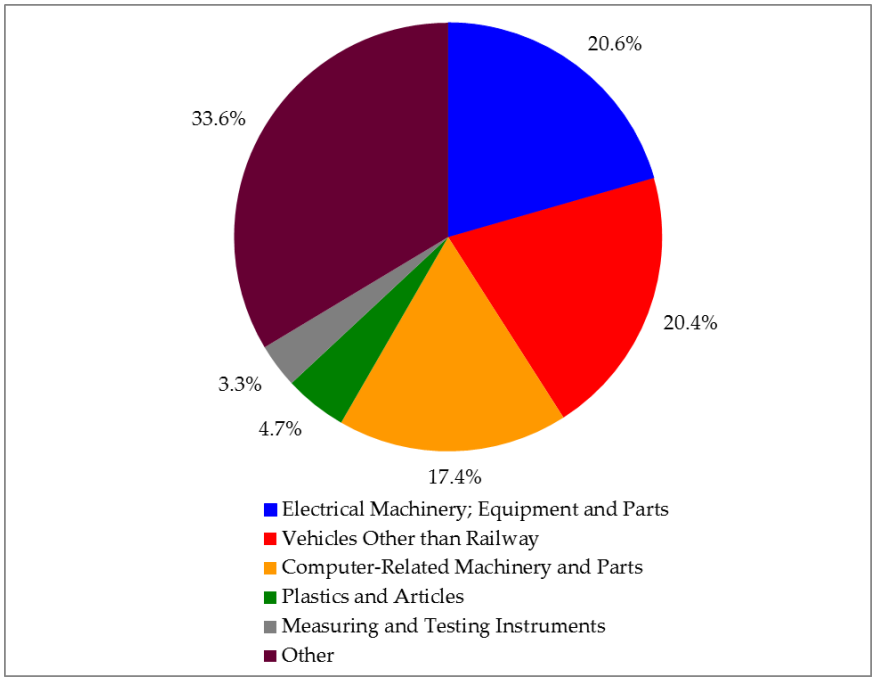


Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data

Figure 12: Average Weight per Truck Crossing (U.S. Imports) at Texas-Mexico Border (2000 to 2011)

The Top Five Commodities

The top five commodities (in terms of value) traded between the U.S. and Mexico that crossed by surface mode at Texas's land ports between 2007 and 2012 are: electrical machinery, equipment, and parts; vehicles other than railway; computer related machinery and parts; plastics and articles; and measuring and testing instruments (see Figure 13). These five commodities accounted for 66.4% of the traded value between the U.S. and Mexico (that crossed by surface mode at a Texas land port) in 2012.



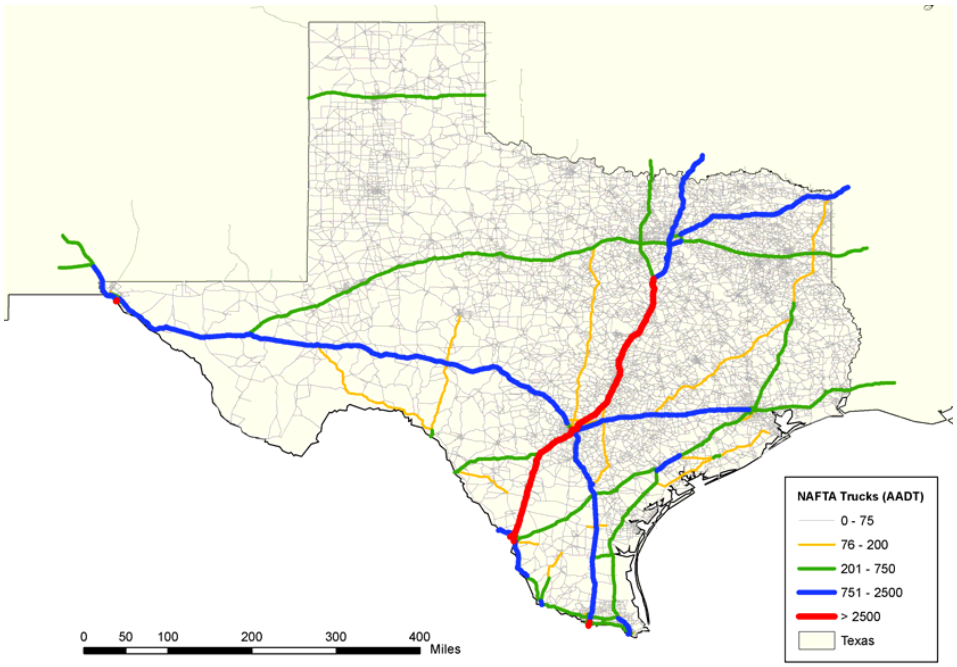
Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, TransBorder Freight Data

Figure 13: Top Five Commodities Traded between the U.S. and Mexico (Crossed by Surface Modes at a Texas Land Port) - 2012

Where does the Traffic "Flow" in Texas?

Not all border cities are the same: some are mainly transshipment points, such as Laredo while others such as El Paso are major manufacturing sites (Vadali, Kang, and Fierro, 2011). Border cities thus either serve as an intermediate service center for commodities shipped over long distances or they support local manufacturing. Depending on the crossing, the characteristics of the freight that crosses and the trip lengths and structure vary significantly. For example, in El Paso where cross-border freight movements support the local manufacturing base, the trip lengths tend be short-haul (Vadali, Kang, and Fierro, 2011).

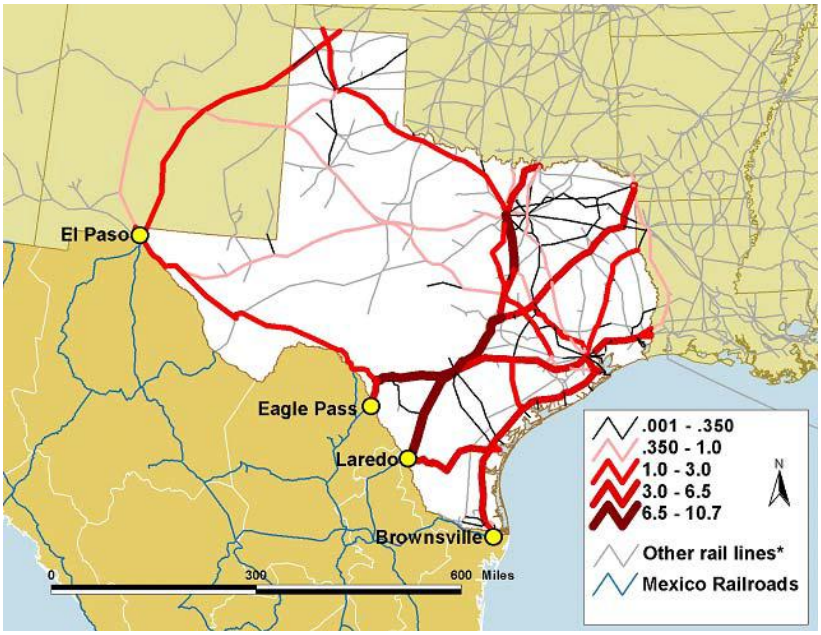
In the cases where the supply chains involves origins and destinations away from the immediate border region, past studies have found that NAFTA trucks use mainly seven highway corridors: IH 35, IH 10, US 59, US 281, IH 20, IH 30, and US 77. These corridors represent two percent of all Texas roadway mileage, but are used by more than 83% of the NAFTA trucks that use the Texas highway system (Cambridge Systematics, 2007). Figure 14 shows the daily NAFTA truck flows on Texas highways in 2003 – the most recent year for which NAFTA truck routing data are available.



Source: Cambridge Systematics, 2007

Figure 14: Daily NAFTA Truck Flows on Texas Highways in 2003 (Average Annual Weekday Trucks)

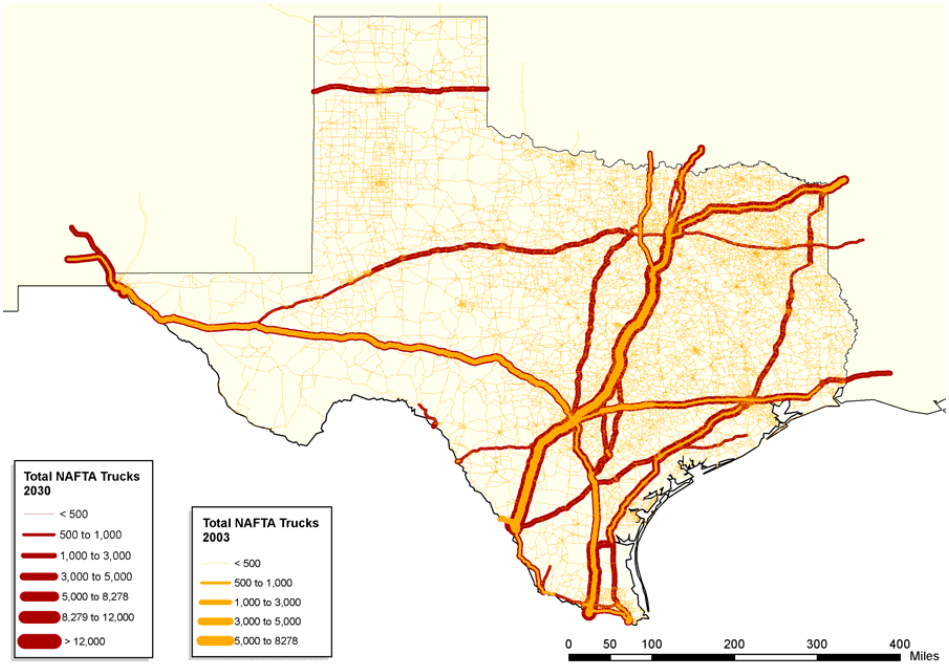
Similarly, Figure 15 illustrates the rail flows to and from major Texas NAFTA gateways.



Source: Cambridge Systematics, 2007

Figure 15: Texas NAFTA Gateway Rail Flows (2003 Total Annual Rail Tonnage – Millions of Tons)

To estimate the impacts of future NAFTA trade volumes on Texas's transportation system, Cambridge Systematics developed three scenarios. Figure 16 shows the forecasted truck flows (NAFTA and non-NAFTA) on Texas's highway network in 2030 – assuming no additional capacity expansion until 2030. In this scenario, NAFTA trucks will present 50% of the total trucks on the IH 35 corridor – up from 27% in 2003 (Cambridge Systematics, 2007).



Source: Cambridge Systematics, 2007

Figure 16: 2003 versus 2030 Daily NAFTA Truck Flows on the Current Texas Highway Network
(Average Annual Weekday Trucks - AAWT)

Looking Forward: What Impacts Cross-Border Traffic and Trade?

Inadequate Capacity

In 2007, Cambridge Systematics reported that Global Insight TRANSEARCH projected an increase of nearly 207% in NAFTA tonnage on Texas highways and railroads through 2030. Truck tonnage is projected to increase by 251% and rail tonnage is projected to increase by 118% by 2030. At the same time the number of trucks carrying NAFTA freight is projected to increase by 263% while the number of rail units will increase by 195%. Cambridge Systematics (2007) reported capacity concerns at border crossings that result in delays especially during the peak hour, congestion on key

NAFTA highway corridors, and rail capacity concerns that limit multimodal interoperability.

Opening of the Border

> Swift purchased a medium-sized Mexican long haul and dray carrier called Transmex to ensure a more seamless operation between the U.S. and Mexico (Cambridge Systematics, 2007).

Mexican trucks are currently not allowed to operate beyond a 20 mile zone north of the U.S. – Mexico border. Goods come from the interior of Mexico are shipped to a warehouse (usually owned by customs brokers or freight forwarders) near the border. Once paperwork is submitted for the goods to clear customs, a drayage carrier collects the shipment and crosses the border and delivers the shipment to a warehouse on the U.S. side of the border within the commercial zone. At this point, the goods are trucked by a long distance carrier to a destination beyond the commercial zone. This system introduces inefficiencies and adds cost to the supply chains. Carriers are; however, realizing cost savings through mergers, acquisitions, and alliances among Mexican and U.S. carriers. For example, a number of U.S. trucking firms have purchased Mexican trucking firms to ensure a more seamless operation between U.S. and Mexican origins and destinations. Other carriers (e.g., Con-Way) have entered into partnerships with large Mexican trucking companies to ensure more seamless operation between the U.S. and Mexico (Cambridge Systematics, 2007).

Waiting to Cross the Border

A number of factors could result in border delays. These relate to both border infrastructure (e.g., design of the border facilities, inadequate crossing capacity, and inadequate road capacity serving the crossing) and operations (e.g., inadequate staffing to process vehicles). In the case of freight, excessive wait times to cross the border increase the cost of transportation and therefore the cost of trade. Vadali et al (2011) reported that the total daily direct cost of delay at the Bridge of the Americas (BOTA) in the northbound direction amounted to $17,452 per day for shippers and carriers in 2009. The direct cost per hour per truck for labor, fuel, and other operating costs were estimated at $39 in 2009. Vadali et al; however, only calculated the direct costs of border delays and did not quantify the broader economic impacts in terms of business productivity, output, and employment or the social costs of border delays.

Lack of Federal Funding

Customs and Border Protection (CBP) has reported that approximately $6 billion (or approximately $600 million per year) is needed to fund identified port of entry (POE) needs. Although Congress has been reviewing POE funding, funding levels have been inadequate to cover the identified needs. Furthermore, CBP are under statutory

limitations that prevent the acceptance of donations to cover operating and staffing costs. CBP can only accept private donations of land and property. Outside of this scenario approval is required from Congress for a private donation. The existing statutory language is being reviewed, but a change to the current legislation is not foreseen over the short term. Federal Agencies (i.e., Department of State, CBP, and Federal Highway Administration) have thus encouraged the development of Border Master Plans to prioritize POE projects.

Rail Crossings

Throughout Texas, the rail system is impacted by growing metropolitan areas that have resulted in bottlenecks, are encroaching on rail corridors, causing conflicts at grade crossings, and are causing capacity concerns because of limited space for rail terminal expansion. The situation is, however, even more dire in the gateway communities on the border. In the El Paso area and in Laredo, the major rail terminals that serve cross-border rail are within the urban boundaries, compromising safety and the operating speed of trains. For example, conflicts at grade crossings in the City of Juarez have resulted in the window for rail operating between Ciudad Juárez and El Paso being limited to nine hours per day – i.e., from 10:00 PM to 7:00 AM. This operational window allows for the interchange of a maximum of ten trains per day. Addressing rail gateway bottleneck issues are complex and involve substantial investments, but are critical to ensure the continued role of rail in U.S.-Mexico trade.

Violence in Mexico

When President Calderón took office in 1996, he declared war on Mexico's drug trade and the drug cartels involved. A number of checkpoints were implemented on Federal roads in states, such as Chihuahua, Nuevo León, and Tamaulipas, with drug corridors. At these checkpoints commercial vehicles are inspected to combat the trafficking of arms, drugs, and humans. These checkpoints; however, increases the cost of transportation (i.e., the time) to move freight on major trade corridors. Furthermore, there have been newspaper reports of drug cartels hijacking trucks transporting steel and agricultural products, as well as theft from trains. These thefts increase the costs of doing business in Mexico as trucking companies and the railroads are required to invest in security measures (hire guards, consult security experts, and invest in positioning devices to track cargo) (Rosenburg, 2009).

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